

# **King County Shingles in Paving Demo Project**

## **Stakeholder Meeting Notes**

Tuesday, August 21, 2007

*Note: This document records discussions among participants at the Stakeholder Meeting. The information included here has not been fact-checked and is not intended for citation.*

### **Key Outcomes:**

- The meeting included a relatively large turnout (about 40 people participated, including presenters) with representatives from most key stakeholder/interest groups.
- Stakeholders agree there are no compelling reasons not to pursue the project, assuming tight quality assurance/quality control (QA/QC) practices and procedures are implemented.
- Stakeholders requested summary of related projects and test results, as well as specifications.
- There is a need for a tight recycled asphalt shingles (RAS) specification, both for purposes of any engineered use in hot mix asphalt (HMA) and for environmental/health protection.

### **Objective and Overview of Asphalt Shingles Demonstration Project**

*Presenter: Kris Beatty, LinkUp Program Manager, King County Solid Waste Division*

#### **Objective:**

- Champion development of market for tear-off shingles
  - Currently, 17,000 tons of asphalt shingle waste a year in King County (outside Seattle); 16,000 tons sent to landfill
  - Material is currently not used in hot mix asphalt in Washington state
- Verify project strategy for use in hot mix asphalt is the highest priority use of material
- Use trials done by other states as examples

#### **Overview:**

- Phase I: Involve other public agencies to gather input and develop a plan
- Phase II: Contact asphalt producers and gauge their ability and willingness to provide material; form partnerships
- Phase III: Develop user specifications
- Phase IV: Monitor production, perform tests, produce and publish reports

#### **Questions:**

- Product testing - will there be monitoring for long-term performance?
- Opportunity to perform accelerated tests in the lab - is this a good option?
- How can we accurately test performance? This is one of the biggest challenges in the hot mix asphalt industry.

### **Current Status of Tear-off Shingle Recycling: Other State Efforts**

*Presenter: Dan Krivit, Dan Krivit and Associates*

Dan Krivit's key points (PowerPoint presentation is attached):

1. Recycling of tear-off RAS in HMA is feasible if strict QA/QC procedures are followed.
2. Other applications for the use of RAS can be explored and monitored. But recycling into HMA is the most well researched and has the greatest, immediate potential demand, and therefore should be highest priority for the LinkUp project.
3. There are multiple facilities nationwide that successfully recycle tear-off shingles into HMA.
4. There are several states that regulate these facilities and RAS recycling.
5. The King County *LinkUp Shingles in Paving Demo Project* can learn from these case studies to develop its own unique demonstration design.
6. Shingle recyclers should plan to meet or exceed minimum requirements for both RAS material quality and environmental regulations.
7. There are a variety of benefits for recycling RAS into HMA (e.g., helps prevent rutting, reduces landfilling, and reduces need for virgin asphalt cement). There are also engineering challenges that must be managed (e.g., the asbestos issue, nails, and impacts on final HMA asphalt binder).
8. The economics of recycling shingles are determined by local conditions including the prevailing prices of disposal at landfills, the prices for virgin asphalt cement, the quality of the final RAS product to be used in HMA, and the costs of sourcing, processing, and recycling.
9. Much of the information about past case studies is already posted on [www.ShingleRecycling.org](http://www.ShingleRecycling.org).
10. There is an excellent opportunity for *LinkUp Project Stakeholders* to learn much more detailed information about tear-off shingle recycling at the upcoming “3<sup>rd</sup> Asphalt Shingle Recycling Forum” to be held in Chicago on November 1 – 2, 2007. (Link to the [Forum web page](http://www.ShingleRecycling.org) at [www.ShingleRecycling.org](http://www.ShingleRecycling.org) for more information and to register.)

#### Questions:

- What percentage of tear-off shingles can be used in HMA?  
*Current specifications allow “up to five (5) percent” of shingle scrap to be used in HMA. Tear-off shingles are generally richer in asphalt cement and may be more unpredictable than manufacturers’ shingle scrap when used in HMA. Missouri DOT has allowed two (2) percent tear-off RAS without adjusting the virgin asphalt binder grade.*
- Is there an existing specification that details how much adjustment to make to the virgin binder?  
*No one specification with a blanket percentage applies to all mixes. The Missouri specification and the AASHTO specification come closest to providing the necessary guidance. Need to consider all factors that affect the mix design and final HMA product including (but not limited to):*
  - Specified pavement application (e.g., type of road);
  - Performance grade (PG) of virgin asphalt cement (AC) binder;
  - Amount and AC binder PG grade in the RAS;
  - Gradation and amount of the RAS;
  - Amount and AC binder grade of recycled asphalt pavement (RAP);
  - HMA plant temperature and retention time;
  - Moisture content of RAS and RAP; and
  - Age of material.*To maximize amount of tear-off shingles in a mix, consider adjusting the virgin binder. This may raise the cost but help mitigate the potential for increased low temperature cracking.*
- Have there been any long term studies?  
*Some roads with shingles in the HMA have been in use since 1990 or earlier. While controlled surveys and published research that document the performance of these roads have not yet been completed, they are still in use and performing as designed.*

## **Project approach**

*Presenters: Julie Colehour, Colehour+Cohen and Katie Kennedy, Cascadia Consulting Group Lead  
Discussion with Dan Krivit, DKA as Technical Expert*

### **Key Points:**

- Regulatory agencies stated that they would not have a problem with a demonstration project plan if the supply of tear-off shingles is controlled to prohibit asbestos containing material (ACM).
- The asphalt cement (AC) content in shingles is valuable as a paving additive and therefore shingles should be a candidate for landfill diversion.
- HMA manufacturers cited cost-savings as a primary reason for using tear-off shingles in their mix. They also strive to be environmentally conscious.
- City of Seattle representative stated there may be an exception to 90/10 hauling rule for shingle recycling loads, allowing them to be hauled by other companies that certificated haulers, depending on the details of the proposed demonstration project, including sources and composition of the loads.
- Specific dust control measures may be necessary to proactively protect worker health and safety.
- WSDOT representatives stated they do not want to use the standard asphalt cement (AC) “wash out” lab method that utilizes chlorinated solvents for measuring AC content in material samples (e.g., HMA, RAP or RAS) due to the toxicity of such solvents.
- Agency departments of transportation (DOT) representatives are hesitant to use tear-off asphalt shingles in the absence of successful trials.
- Ideally, more than one trial should be conducted. Replication at multiple pavement construction sites would be beneficial in determining performance.
- Spring is the optimal time for paving contractors and their HMA suppliers.
- Using shingles in the HMA base course layer only can be one means to reduce risks of any negative pavement impacts.
- Long-term performance analyses may require 5 to 15 years of monitoring.
- The demonstration project should call for at least 1,000 tons of HMA to allow the HMA operator a better chance to optimize the plant to accommodate the addition of tear-off RAS and to assure the best final HMA product possible.
- The demonstration should be able to be accomplished between one and two years.
- An extended bid time should be provided to allow the HMA manufacturer(s) and RAS supplier(s) to adequately consider plant changes and estimate costs for the use of tear-off shingles in the mix.
- There was a suggestion that the *LinkUp Project* team should also consider using tear-off shingles as road base aggregate.
- Private, commercial options should be considered for the demonstration paving project, such as parking lots, etc.

### **Next Steps**

**Presenter: Julie Colehour, Colehour+Cohen**

- Distribute information packet to attendees (to include previous projects’ test results and other existing specifications)
- Identify one or more engineer(s) to attend upcoming *3rd Asphalt Shingle Recycling Forum in Chicago* (November 1- 2, 2007); King County could potentially assist with the costs for someone to attend if there is interest
- Form advisory group

- *Project* team and advisory group to further discuss:
  - Type of project
  - Technical requirements
  - Testing requirements
  - Alternative uses, such as aggregate road base
- Determine if *Project* should move forward